

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGIONORDER NO. 90-190WASTE DISCHARGE REQUIREMENTS
FOR
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. Shasta County (hereafter Discharger) submitted a Report of Waste Discharge, dated 24 July 1989. The Discharger also submitted plans for construction of the West Central Landfill, Phase I Closure & Phase 2 Facilities, dated June 1989; Design Criteria for Phase I Closure & Phase II Construction, dated May 1989; Background Water Quality Report, dated 8 November 1982; Operating Procedures Manual, dated March 1982; Report of Disposal Site Information, dated September 1981; and Design Criteria Report for Phase I, dated July 1981.
2. The Report of Waste Discharge requests revised waste discharge requirements (WDRs) for closure of Phase I of the landfill (formerly classified as a Class II-2) and construction of Phase II of the landfill which will include a Class II surface impoundment for containment of leachate. The Phase I landfill and surface impoundments are currently regulated by WDR Order No. 81-079, which is no longer in conformance with Title 23, California Code of Regulations (CCR), Chapter 3, Subchapter 15 (hereafter Subchapter 15).
3. The 1,067-acre facility, comprised of Assessor's Parcel Nos. 041-660-05, 041-660-15, 041-660-14, 041-660-06, 041-350-24, 041-350-22, 045-020-01, 045-020-02, 205-420-03, and 205-420-10, is owned by Shasta County and currently operated by the City of Redding. The facility is approximately 12 miles southwest of Redding on Clear Creek Road in Sections 2 and 3, T30N, R6W, MDB&M, as shown on Attachment "A" which is incorporated herein and made part of this Order.
4. This is an existing facility operated by the Discharger since 1981. Waste disposal activities are proposed for 200 acres of the facility under Phase I and Phase II. Phase I is expected to reach its capacity of 900,000 cubic yards by July 1990 and will be closed under the provisions of Subchapter 15. Phase II will have a total capacity of approximately 7,000,000 cubic yards and an estimated life of 20 years. Phase II will be constructed in stages. Phase II-A will be approximately seven acres with a capacity of approximately 225,000 cubic yards and an estimated life of one year.

Full buildout of the facility is planned in five phases with a total volume of 17,000,000 cubic yards.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-2-

5. The waste management facility currently consists of a Class II-2 landfill (Phase I) and four unclassified surface impoundments for the containment of leachate. Immediate expansion will consist of construction of Phase II-A Class III landfill and a Class II surface impoundment. Four unclassified surface impoundments present at the site will be used for containment of contact water which may contain minor amounts of waste constituents. Buildout of Phase II will occur over the next several years. The landfill and surface impoundment Waste Management Units (WMUs) are designated as follows:

Phase I-Class III (Formerly Class II-2) Landfill	WMU No. 1
Phase II-Class III Landfill	WMU No. 2
Class II Surface Impoundment	WMU No. 3
Four Unlined Surface Impoundments	Unclassified

The WMUs are shown on Attachment "B" which is incorporated herein and made part of this Order.

WASTES AND THEIR CLASSIFICATION

6. The Discharger has discharged municipal solid waste to WMU No. 1 which is nearing capacity. The Discharger proposes to discharge municipal solid waste to WMU No. 2 as shown on Attachment "B". These wastes are classified as 'nonhazardous solid wastes' or 'inert wastes' using the criteria set forth in Subchapter 15. The Discharger also proposes to accept primary and secondary sewage sludge from local wastewater treatment plants and sludge from the County-operated septage ponds. Such wastes can be accepted at Class III landfills providing the conditions described in Section 2523(c) of Subchapter 15 are met.
7. Leachate from the landfill units and the Class II surface impoundment leachate collection and removal systems (LCRSs) will be discharged to the Class II surface impoundment (WMU No. 3). These wastes are classified as 'designated wastes' using the criteria set forth in Subchapter 15.
8. Tires will be disposed into two separate unclassified WMUs in adjacent canyons as shown on Attachment "B". Tires are classified as 'inert wastes' using the criteria set forth in Subchapter 15.

DESCRIPTION OF THE SITE

9. The disposal method is a canyon fill operation. The surrounding area is characterized by dendritic-style drainage courses which have dissected canyons into the surrounding material. The ridge line ranges in elevation from 1,040 to 1,065 feet MSL. The canyon bottom ranges between 55 and 120 feet below the ridges. Vegetation around the site consists predominately of oak trees, manzanita brush, and grass.

A diversion channel has been constructed immediately above the site to route surface water from above the site to an adjacent drainage.

10. Land within 1,000 feet of the facility is used for grazing and open space.
11. Ground water is relatively shallow beneath the site and, depending upon recharge by precipitation, may discharge into the canyon drainages. Due to the high ground water, drainage systems are necessary to prevent buildup of hydraulic head under the disposal areas. The underdrains consist of perforated PVC pipe in the bottom of the drainage channels. Compacted fill and clay liners will be placed over the pipes in quantities sufficient to assure a minimum five-foot separation between ground water and the base of the LCRSs.
12. The site is near the western edge of the Redding ground water basin. The geologic units exposed at the site consist of recent alluvium and dredge tailings, the Pleistocene Red Bluff Formation, and the Pliocene Tehama Formation. The Cretaceous Chico Formation is present at depth beneath the site but does not outcrop in the area.

In most areas of the Redding ground water basin, the Chico Formation contains saline water, believed to be a relict of its marine depositional environment. The water is generally of poor quality with limited use.

Unconformably overlying the Chico Formation is the Tehama Formation. The formation consists of fluvial deposits of clayey and silty sandstone with lenses of pebble and cobble conglomerates. The Tehama Formation comprises the canyon sides and bottoms, and is the principal water-bearing formation in the area.

Overlying the Tehama Formation is the Red Bluff Formation. The formation forms a thin veneer on the ridge tops in the area and is similar in composition and depositional history to the Tehama Formation. The Red Bluff Formation generally contains little useable ground water.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-4-

13. The soils immediately underlying the WMUs consist of gravelly and sandy silts and clays of the Red Bluff and Tehama Formations. Undisturbed permeabilities on the Red Bluff Formation range between 1×10^{-5} and 1×10^{-6} cm/sec.
14. First-encountered ground water is in the Tehama Formation. Ground water flow generally follows the topography, flowing from the ridges into the canyon. Monitoring wells indicate the water table is approximately 80 feet below the ridges. Monitoring wells in the bottom of the canyon are artesian in the winter and spring, indicating a ground water discharge area. In the summer, ground water in the canyon bottom may drop to approximately three feet below the ground surface.

The general direction of ground water flow in the area is eastward toward Dry Creek. Permeabilities of the Tehama Formation immediately beneath the site range from 1.8×10^{-4} to 5.4×10^{-5} cm/sec. Ground water velocities have been calculated at 31 feet/year.

15. Ground water under the site is classified as Magnesium-Calcium Bicarbonate-type waters. Iron concentrations are elevated above the EPA secondary drinking water standards. During construction of one of the artesian monitoring wells (prior to the deposition of waste), effervescence was noted in the water. The gas was odorless and ignitable, indicating the presence of natural gas.
16. The nearest significant fault is the Quaternary Battle Creek Fault, an east/west-trending normal fault approximately 20 miles east of the site. The last known movement of this fault appears to be over 400,000 years ago.

The maximum credible earthquake on the Battle Creek Fault was estimated to be a Richter magnitude of 6.0.

17. The beneficial uses of ground water are domestic, municipal, agricultural, and industrial supply.
18. The facility receives an average of 35 inches of precipitation per year as provided by the California Department of Water Resources, Rainfall Analysis for Drainage Design, Bulletin No. 195. The mean evaporation for this facility is approximately 60 inches per year as obtained from the California Department of Water Resources. Based on these data, average annual net evaporation at the facility is approximately 25 inches.
19. The 1,000-year, 24-hour precipitation event for the facility is nine inches as estimated from data published by the California Department of Water Resources, Rainfall Analyses for Drainage Design, Bulletin No. 195.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-5-

20. The 100-year, 24-hour precipitation event for the facility is seven inches as estimated from maps published by the National Oceanic and Atmospheric Administration, December 1982.
21. The facility is not within a 100-year floodplain; however, the proposed expansion will cover an ephemeral drainage course. To prevent inundation or washout of WMUs due to floods with a 100-year return period, the watercourse upstream of the facility has been diverted into the adjacent drainage.
22. Surface drainage is to Dry Creek, a tributary of Cottonwood Creek, which flows into the Sacramento River.
23. The beneficial uses of these surface waters are domestic, municipal, agricultural, and industrial supply; ground water recharge; power generation; recreation; esthetic enjoyment; navigation; freshwater replenishment; and preservation and enhancement of fish, wildlife, and other aquatic resources.

OPERATION OF FACILITIES

24. Waste will be accepted from the unincorporated areas of Shasta County and the Cities of Redding and Anderson. The current maximum daily load capacity is estimated to be 480 tons, and the average daily load is estimated at 325 tons. Based upon the Discharger's estimated density of compacted waste of 800 lbs/yard, the current maximum daily load capacity and the average daily load capacity are expected to be 1,200 cubic yards and 812 cubic yards, respectively. The waste load is estimated to increase at two percent per year.

Commercial wastes will be deposited directly at the working face; however, private citizens' waste will be deposited into 40-cubic-yard boxes which will be transferred to the working face by the operator. This will allow for control of the types of wastes deposited and implementation of a hazardous waste screening program.

25. While waste is deposited in Phase II-A, cover material will be obtained from the expansion areas. The expansion areas of Phase II will be prepared in 100,000 to 300,000-square-foot increments, and a liner and leachate collection system installed in each incremental unit until buildout of Phase II.

Expansion will continue through Phase V with a total volume of 17,000,000 and a predicted remaining life of approximately 35 years. The life expectancy may increase by 25 to 35 percent if recycling and mulching operations are fully implemented.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-6-

26. Current plans include closure of WMU No. 1, expansion of the facility by constructing Phase II (WMU No. 2), and construction of a Class II surface impoundment. The four existing unclassified surface impoundments will be used to store and evaporate contact water. Pump stations will be used to lift leachate and contact water from the bottom of the canyon to the ponds on the ridge line. The construction of these facilities are planned for 1990.

DESIGN OF WASTE MANAGEMENT UNITS

Landfill

27. The Discharger's data demonstrate that natural geologic materials between the base of the Class III landfill units and ground water may not prevent the impairment of beneficial uses of ground water from the discharge of nonhazardous solid wastes to the landfill units.

The bottom of the canyon in which the landfill is located is a ground water discharge zone. To avoid having ground water enter the landfill, an underdrain will be constructed in the canyon bottom to collect and divert this water into the stream below the landfill. The underdrain will consist of a slotted pipe buried a minimum of five feet below the top of the lowermost portion of the clay liner, as shown on Attachment "C" which is incorporated herein and made a part of this Order.

To avoid leachate from the landfill from entering ground water, the Discharger proposes to install a minimum one-foot clay liner. The liner will be placed in two six-inch lifts and compacted to a minimum relative compaction of 90 percent. The first lift will be compacted to achieve a maximum permeability of 1×10^{-8} cm/sec. The second lift will have bentonite added to reduce its permeability to a maximum of 5×10^{-7} cm/sec. A portion of the canyon bottom, where the liner overlies permeable channel deposits, will have both soil lifts constructed with the bentonite mix to reduce the potential for leakage.

Overlaying the clay liner will be a blanket LCRS. The LCRS will consist of a six-inch HDPE main line in the canyon bottom connecting to a pipe leading to the leachate ponds. Four-inch lateral lines will branch off the main line at approximately 200-foot intervals. The pipes will be placed in gravel-lined trenches. A six-inch layer of fine, clean gravel will cover the entire liner to convey leachate to the collection pipes and prevent the buildup of hydraulic head on the liner, as shown on Attachment "C".

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-7-

Impoundments

28. The Discharger proposes to construct a Class II surface impoundment for the containment of leachate. The pond liners will consist of (from the top down) an 80-mil HDPE synthetic membrane liner, a geotextile, a geonet drainage layer for leachate collection and removal, a second geotextile, and a 24-inch clay liner with a maximum hydraulic conductivity of 1×10^{-9} cm/sec, as shown on Attachment "D" which is incorporated herein and made a part of this Order.

CERTIFICATION

29. A registered civil engineer or certified engineering geologist will certify that all WMUs at this facility meet the construction or prescriptive standards and performance goals of Subchapter 15 and these WDRs.

CEQA CONSIDERATIONS

30. The action to revise WDRs for this facility is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, CCR, Section 15302.

OTHER LEGAL REFERENCES

31. The Board has adopted a Water Quality Control Plan, 2nd Edition, for the Sacramento River Basin (5A) which contains water quality objectives for all waters of the Basin. These requirements are consistent with that Plan. Furthermore, this Order implements the prescriptive standards and performance goals of Subchapter 15, effective 27 November 1984.
32. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
33. The Board has notified the Discharger and interested agencies and persons of its intention to revise the WDRs for this facility.
34. In a public hearing, the Board heard and considered all comments pertaining to this facility and discharge.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-8-

IT IS HEREBY ORDERED that Order No. 81-079 be rescinded and the County of Shasta, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The discharge of 'hazardous wastes' at this facility is prohibited. For the purposes of this Order, the term 'hazardous wastes' is as defined in Subchapter 15.
2. The discharge of 'designated wastes' at this site, except as noted in Discharge Prohibition No. 3 and other designated wastes which are shown to have a lower risk of degrading water quality than indicated by their classification, is prohibited. For the purposes of this Order, the term 'designated wastes' is as defined in Subchapter 15.
3. The disposal of wastes, other than leachate from the landfill units and surface impoundment LCRSs, to the Class II surface impoundment is prohibited.
4. The discharge to the landfill units of liquid or semi-solid waste (i.e., waste containing less than 50-percent solids), except dewatered sewage, septage, or water treatment sludge as provided in Section 2523(c) of Subchapter 15, is prohibited.
5. The discharge to the landfill units of solid waste containing free liquid or moisture in excess of the waste's moisture-holding capacity is prohibited.
6. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or ground water is prohibited.
7. The discharge of waste from the surface impoundments is prohibited.
8. The discharge of waste to ponded water from any source (except Class II surface impoundments) is prohibited.
9. The discharge of waste within 100 feet of surface waters is prohibited.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-9-

10. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products which, in turn,
 - a. require a higher level of containment than provided by the unit,
 - b. are 'restricted hazardous wastes', or
 - c. impair the integrity of containment structures, is prohibited.

B. Discharge Specifications

GENERAL SPECIFICATIONS

1. Wastes shall only be discharged into and shall be confined to the WMUs specifically designed for their containment as stated in Finding Nos. 6, 7, and 8 of this Order and shown on Attachment "B".
2. The discharge of liquid and semi-solid wastes to the Class II surface impoundments is limited to leachate from the landfill unit and surface impoundment LCRSs.
3. A minimum separation of five feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying ground water, including the capillary fringe.
4. Prior to the discharge of waste to a WMU, all wells within 500 feet of the unit shall have sanitary seals which meet the requirements of the Shasta County Health Department or shall be properly abandoned. The Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to the construction, alteration, destruction, or abandonment of all. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to the State Department of Water Resources.
5. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control.

General WMU Construction

6. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the WMUs.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-10-

7. Materials used to construct LCRSs shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the WMUs and the post-closure maintenance period.
8. Clay liners and landfill caps shall have a maximum hydraulic conductivity of 1×10^{-6} cm/sec and a minimum relative compaction of 90 percent. At least 30 percent of the material, by weight, shall pass a No. 200 U.S. Standard sieve with no particles larger than one inch. The materials shall be fine-grained soils with a significant clay content and without organic matter in the "SC" (clayey sand), "CL" (clay, sandy, or silty clay), or "CH" (clay, sandy clay) classes of the Unified Soil Classification system. Hydraulic conductivities of liner materials shall be determined by laboratory tests using solutions with similar properties as the fluids that will be contained. Hydraulic conductivities of cap materials shall be determined by laboratory tests using water. Hydraulic conductivities determined through laboratory methods shall be confirmed by field testing of the finished liner. Construction methods and quality assurance procedures shall be sufficient to ensure that all parts of the liner and cap meet the hydraulic conductivity and compaction requirements.

A Construction Quality Assurance (CQA) Plan shall be submitted by the Discharger for approval by the Executive Officer prior to placement of any earthen or synthetic liners or covers. The CQA Plan shall be implemented under the direct supervision of a California registered civil engineer or a certified engineering geologist. The results of all testing on liner or cover placement, regardless of whether the test passed or failed, shall be submitted to the Board.

9. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by the WMU and to prevent the buildup of hydraulic head on the underlying liner. The depth of fluid in any collection sump shall be kept at or below the minimum needed to ensure efficient pump operation.
10. Prior to construction of liners, underdrains, covers, or LCRSs for expansion of the site, including the remainder of Phase II, full-design plans and specifications shall be submitted to the Board.

Supervision and Certification of Construction

11. All containment structures shall be designed and constructed under the direct supervision of a California registered civil engineer or a certified engineering geologist. Prior to placement of any waste in the Phase II

landfill or the Class II surface impoundment, the WMUs shall be certified by that individual as meeting the prescriptive standards and performance goals of Subchapter 15 and these WDRs.

Water Quality Protection Standards

12. The concentrations of indicator parameters or waste constituents in waters passing through the Points of Compliance shall not exceed the "water quality protection standards" established pursuant to and enumerated in Monitoring and Reporting Program No. 90-190, which is attached to and made part of this Order.

Protection from Storm Events

13. WMUs shall be designed, constructed, and operated to prevent inundation or washout due to floods with a 100-year return period. Class II surface impoundments and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year wet season precipitation without using the required two feet of freeboard. Class III landfill units and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under 100-year, 24-hour precipitation conditions.
14. Precipitation and drainage control systems for the Class III landfill WMUs shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour precipitation conditions as described in Finding No. 20 above.

Precipitation and drainage control systems for the Class II surface impoundment WMUs shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 1,000-year, 24-hour precipitation conditions as described in Finding No. 19 above.

15. A complete liquid mass balance shall be performed for all WMUs and drainage facilities based on the above design parameters and shall be sent to the Board by 1 October 1990.
16. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-12-

17. Annually, prior to the anticipated rainy season but no later than **15 October** of each year, any necessary erosion control measures shall be implemented and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the facility and to prevent surface drainage from contacting or percolating through wastes. The Discharger shall submit an annual report to the Regional Board by **1 November** describing measures taken to comply with this specification.

LANDFILL SPECIFICATIONS

18. During the rainy season, a minimum one-foot thickness of low-permeability cover shall be maintained over all but the active disposal area of the landfill units. The active disposal area shall be confined to the smallest area practicable based on the anticipated quantity of waste discharge and other waste management facility operations.
19. Methane and other landfill gases shall be adequately vented, removed from the landfill units, or otherwise controlled to prevent the danger of explosion, adverse health effects, nuisance conditions, or the impairment of beneficial uses of water due to migration through the vadose (unsaturated) zone.
20. Phase II landfill units shall have a clay liner with a minimum thickness of twelve inches. The clay layer will consist of two parts: a lower six-inch compacted lift of one inch minus clayey soil having a maximum permeability of 1×10^{-8} cm/sec, and an upper six-inch compact soil layer of similar soil having bentonite added to reduce its permeability to a maximum of 5×10^{-7} cm/sec.
21. The landfill units shall have a blanket-type LCRS immediately above the liner which is designed and operated to prevent the development of one foot or more of hydraulic head on the liner at any time.
22. Landfill leachate shall be discharged to the Class II surface impoundments.
23. Leachate generation by the landfill units shall not exceed 85 percent of the design capacity of the leachate sump pump. If leachate generation exceeds this value and/or if the depth of fluid in an LCRS sump exceeds the minimum needed for efficient pump operation, then the Discharger shall immediately

cease the discharge of sludges and other high-moisture wastes to the landfill unit and shall notify the Board in writing within seven days. Notification shall include a timetable for corrective action necessary to reduce leachate production.

SURFACE IMPOUNDMENT SPECIFICATIONS

Class II Surface Impoundments

24. The leachate pond (WMU No. 3) shall be constructed to Class II standards. The leachate pond shall have a double liner with an intervening blanket-type LCRS. A synthetic liner of a minimum 80-mils (80/1,000 inch) thickness shall be used for the inner liner. The outer liner shall consist of a minimum two-foot clay liner with a maximum hydraulic conductivity of 1×10^{-6} cm/sec.
25. The leachate pond shall be designed, constructed, and operated to maintain a freeboard of two feet plus the rainfall and landfill leachate developed from a 1,000-year, 24-hour precipitation event or two feet plus the 100-year wet season precipitation, whichever is greater. However, at no time shall the freeboard of the leachate pond impoundment be less than two feet.
26. The pump which transfers leachate from the lower sump to the leachate pond shall have fail-safe equipment or operating procedures to prevent overfilling of the pond.
27. The leachate pond shall be designed, constructed, and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the waterline.
28. Leachate removed from the leachate pond LCRS shall be collected in a concrete sump adjacent to the pond. The sump shall contain an alarm system to indicate the presence of leachate. Upon detection of leachate in a previously dry sump, the Discharger shall notify the Board immediately by phone within 24 hours and submit written notification within seven days. Notification shall include an assessment of the leak upon the containment capabilities of the impoundment and a timetable for remedial action. The Board may require repair of the inner liner of the impoundment or other action necessary to reduce or eliminate leachate production.
29. Solids which accumulate in the surface impoundments shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for landfill and surface impoundment leachate and for

the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2 of Subchapter 15. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to the Board for review. The solids may be discharged to the Class III landfill units only if the Board determines they qualify for classification as 'nonhazardous solid wastes' or 'inert wastes'.

Unclassified Surface Impoundments

30. The three unlined surface impoundments on the ridge top and the surface impoundment containing a single clay liner at the base of the Phase I landfill shall be used for the containment of contact water. Contact water is defined as stormwater which has contacted waste and may contain waste constituents below levels which may pose a threat to water quality. At the end of each winter season, the water in these ponds shall be either evaporated or discharged to sprinkler systems on the adjacent hillside. Under no circumstances shall runoff from the sprinkler system enter surface water drainage courses.

WMU CLOSURE SPECIFICATIONS

31. The closure of each WMU shall be under the direct supervision of a California registered civil engineer or certified engineering geologist.
32. Closed WMUs shall be provided with at least two permanent monuments, installed by a licensed land surveyor, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period.

Landfill Closure

33. At closure, each landfill unit shall receive a final cover which is designed and constructed to function with minimum maintenance and consists, at a minimum, of a two-foot thick foundation layer which may contain waste materials, overlain by a one-foot thick clay layer, and finally by a one-foot thick vegetative soil layer or an engineered equivalent final cover approved by the Board pursuant to Subsections 2510(b) and (c) of Subchapter 15. The clay layer will consist of two parts: a lower six-inch compacted

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-15-

lift of one inch minus clayey soil having a maximum permeability of 1×10^{-6} cm/sec and 90-percent minimum relative compaction, and an upper six-inch compact soil layer of similar soil having bentonite added to reduce its permeability to a maximum of 5×10^{-7} cm/sec and a minimum relative compaction of 90 percent.

34. Vegetation shall be planted and maintained over each closed landfill unit. Vegetation shall be selected to require a minimum of irrigation and maintenance, and shall have a rooting depth not in excess of the vegetative layer thickness.
35. Closed landfill units shall be graded to at least a three-percent grade and maintained to prevent ponding.
36. Areas with slopes greater than 10 percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion.

Surface Impoundment Closure

37. At closure of surface impoundments, all residual wastes (including liquids, sludges, precipitates, settled solids, liner materials, and adjacent natural geologic materials contaminated by wastes) shall be completely removed and discharged to a disposal facility approved by the Executive Officer. If, after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the impoundment shall be closed as a landfill pursuant to Discharge Specification Nos. 33 through 36 above.
38. If 1) residual wastes are classified as nonhazardous pursuant to Title 22, CCR, Division 4, Chapter 30; 2) containment features of the impoundment meet Class II landfill construction standards and performance goals as defined by Subchapter 15; 3) all liquid wastes are removed or treated to eliminate free liquids; and 4) residual moisture does not exceed the moisture-holding capacity of residual wastes, even under closure conditions, a surface impoundment may be closed as a landfill pursuant to Discharge Specification Nos. 33 through 36 above after compaction of the residual wastes.

C. Provisions

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-16-

2. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
3. The Discharger shall notify the Board in writing of any proposed change in ownership or responsibility for construction or operation of the WMUs. The Discharger shall also notify the Board of a material change in the character, location, or volume of the waste discharge and of any proposed expansions or closure plans. This notification shall be given **180 days** prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these WDRs.
4. The Discharger shall comply with Monitoring and Reporting Program No. 90-190 which is attached to and made part of this Order.
5. The Discharger shall maintain legible records of the volume and type of each waste discharged at each WMU and the manner and location of discharge. Such records shall be maintained at the facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Board and of the State Water Resources Control Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Regional Board.
6. On or before **1 August 1990**, the Discharger shall evaluate the current ground water monitoring system to assure the well locations are adequate to cover both Phase I and Phase II. Wells which have significant amounts of sediment and which produce samples with turbidities greater than 5 NTU shall be evaluated and replaced as necessary. All wells shall be constructed with a filter pack matched to the formation and appropriate screen slot size following the criteria described in the *Technical Guidance Manual, Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports*, printed by the State Water Resources Control Board, dated August 1988. Well designs and locations shall be approved by the Executive Officer.
7. On or before **1 September 1990**, the Discharger shall submit to the Board and to the Department of Health Services for approval a report describing a periodic load-checking program to be implemented by the Discharger to ensure that 'hazardous wastes' and 'designated wastes' are not discharged to the Class III landfill units and to ensure that 'hazardous wastes' are not discharged to the Class II surface impoundments.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-17-

8. No later than the first date after 1 July 1990 that this solid waste facility is required to be reviewed pursuant to Subdivision (d) of Section 66796.33 of the Government Code, the Discharger shall submit to the Board for approval an updated closure and post-closure maintenance plan describing the methods and controls to be used to assure protection of the quality of surface and ground waters of the area during final operations and during any proposed subsequent use of the land. The plan must include:
 - a. an estimate of closure and post-closure maintenance costs,
 - b. a proposal for a trust fund or equivalent financial arrangement to provide sufficient funding for closure and post-closure maintenance, and
 - c. the amount to be deposited in the trust fund or equivalent financial arrangement each year.

This plan shall be prepared by or under the supervision of a California registered civil engineer or certified engineering geologist, updated annually, and submitted to the Board by the 15th day of January of each year. The method used to close each WMU at the facility and maintain protection of the quality of surface and ground waters shall comply with waste discharge requirements established by the Board and the most current version of the closure and post-closure maintenance plan which has been approved by the Board. The final report shall be submitted at least 180 days prior to final closure of the facility.

9. If the Discharger, through a detection monitoring program, or the Board finds there is a statistically significant increase in indicator parameters or waste constituents over the water quality protection standards (established pursuant to Monitoring and Reporting Program No. 90-190) at or beyond the points of compliance, the Discharger shall notify the Board or acknowledge the Board's finding in writing within 7 days and shall immediately resample for the constituent(s) or parameter(s) at the point where the standard was exceeded. Within 90 days, the Discharger shall submit to the Board the results of the resampling and either:
 - a. a report demonstrating the water quality protection standard was not, in fact, exceeded; or
 - b. an amended Report of Waste Discharge for the establishment of a verification monitoring program, per Section 2557 of Subchapter 15, which is designed to verify that water quality protection standards have been exceeded and to determine the horizontal and vertical extent of pollution.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-18-

10. If the Discharger, through a verification monitoring program, or the Board verifies that water quality protection standards have been exceeded at or beyond the points of compliance, the Discharger shall notify the Board or acknowledge the Board's finding in writing within 7 days. Within 180 days, the Discharger shall submit to the Board an amended Report of Waste Discharge for the establishment of a corrective action program, per Section 2558 of Subchapter 15, which is designed to achieve compliance with the water quality protection standards.
11. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to the construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order or with Monitoring and Reporting Program No. 90-190, as required by Sections 13750 through 13755 of the California Water Code.
12. The Discharger shall immediately notify the Board of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or of precipitation and drainage control structures.
13. The Discharger shall maintain waste containment facilities and precipitation and drainage controls, and shall continue to monitor ground water, leachate from the landfill units, the vadose zone, and surface waters per Monitoring and Reporting Program No. 90-190 throughout the post-closure maintenance period.
14. The post-closure maintenance period shall continue until the Board determines that remaining wastes in all WMUs will not threaten water quality.
15. The Discharger shall comply with the Standard Provisions and Reporting Requirements, dated 1 February 1990, which are hereby incorporated into this Order.
16. The owner of the waste management facility shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the WMUs and during subsequent use of the property for other purposes.

WASTE DISCHARGE REQUIREMENTS
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-19-

17. In the event of any change in ownership of this waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Board.
18. The Discharger shall complete the tasks outlined in these WDRs and the attached Monitoring and Reporting Program No. 90-190 in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
Construction Quality Assurance Plan for placement of liners and covers	Prior to construction of liners and covers
Evaluation of ground water monitoring system, including assessment of current wells and locations of additional wells for Phase II	1 August 1990
Submit to the Board a load checking program for hazardous waste	1 September 1990
Complete liquid mass balance for containment structures and drainage of facility	1 October 1990

19. The Discharger shall comply with all applicable provisions of Subchapter 15 that are not specifically referred to in this Order.
20. The Board will review this Order periodically and will revise these requirements when necessary.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 22 June 1990.



WILLIAM H. CROOKS, Executive Officer

PVW:gl 5/29/90

Attachments

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 90-190
FOR

SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

NONHAZARDOUS SOLID WASTE MONITORING

The Discharger shall monitor all wastes discharged to the Class III landfill units on a monthly basis and report to the Board as follows:

<u>Parameter</u>	<u>Report in Units of</u>	<u>Frequency of Reporting</u>
Quantity Discharged	cubic yards	Quarterly
Type of Material Discharged	-	Quarterly
Source(s) of Material Discharged	-	Quarterly
Capacity of Phase II Landfill Unit Remaining	percent	Annually

LEACHATE MONITORING

All landfill and surface impoundment LCRS discharge pipes and sumps shall be inspected weekly for leachate generation. Upon detection of leachate in a previously dry LCRS, the Discharger shall immediately sample the leachate and shall continue to sample the leachate at the following frequencies thereafter. Leachate samples shall be analyzed for the following:

<u>Parameter/ Constituent</u>	<u>Report in Units of</u>	<u>Sampling & Reporting Frequency</u>
Flow Rate	gallons/day	Monthly
Specific Conductance (field)	umhos/cm	Monthly
pH (field)	pH units	Monthly
Total Dissolved Solids	mg/l	Quarterly
Chloride	mg/l	Quarterly
Sulfate	mg/l	Quarterly
Nitrate (as N)	mg/l	Quarterly
Sulfides (including H ₂ S)	presence or absence	Quarterly

MONITORING AND REPORTING PROGRAM
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-2-

(Continued)

<u>Parameter/ Constituent</u>	<u>Report in Units of</u>	<u>Sampling & Reporting Frequency</u>
Carbonate Alkalinity	mg/l	Semiannually ³
Bicarbonate Alkalinity	mg/l	Semiannually ³
Total Alkalinity	mg/l	Semiannually ³
Dissolved Iron ¹	mg/l	Semiannually ³
Sodium	mg/l	Semiannually ³
Magnesium	mg/l	Semiannually ³
Calcium	mg/l	Semiannually ³
Potassium	mg/l	Semiannually ³
Dissolved Organic Carbon	mg/l	Semiannually ³
Volatile Organics ²	ug/l	Semiannually ³
Aluminum ¹	mg/l	Semiannually ³
Antimony ¹	mg/l	Semiannually ³
Arsenic	mg/l	Semiannually ³
Cadmium ¹	mg/l	Semiannually ³
Total Chromium (III + VI) ¹	mg/l	Semiannually ³
Chromium (VI)	mg/l	Semiannually ³
Copper ¹	mg/l	Semiannually ³
Lead ¹	mg/l	Semiannually ³
Manganese ¹	mg/l	Semiannually ³
Mercury	mg/l	Semiannually ³
Nickel ¹	mg/l	Semiannually ³
Selenium	mg/l	Semiannually ³
Silver ¹	mg/l	Semiannually ³
Thallium ¹	mg/l	Semiannually ³
Zinc ¹	mg/l	Semiannually ³

¹ Inductively Coupled Argon Plasma Atomic Emission Spectroscopy (ICAP) may be used for analysis of these constituents only.

² EPA Methods 601 and 602, or EPA Method 624 shall be used. All peaks shall be reported.

³ In February and August if liquid is present. If liquid is not present in August, at the first detection of liquid thereafter (for Leachate Monitoring only).

LCRS MONITORING

All LCRSs shall be tested annually to demonstrate operation in conformance with WDRs. The results of these tests shall be reported to the Board and shall include comparison with earlier tests made under comparable conditions.

MONITORING AND REPORTING PROGRAM
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-3-

SYNTHETIC LINER MONITORING

All visible portions of synthetic liners shall be inspected on a weekly basis and their condition reported quarterly to the Board.

SURFACE WATER MONITORING

The Discharger shall establish surface water monitoring stations on Dry Creek above and below the point where runoff from the waste management facility enters the stream channel and from the discharge of the sediment pond in the canyon drainage. The monitoring stations shall be as follows:

<u>Station</u>	<u>Location</u>
R1	Discharge from the lower sediment pond
R2	200 feet upstream from the point of discharge
R3	500 feet downstream from the point of discharge

R3 shall constitute the points of compliance for surface waters.

Surface water samples shall be obtained from R1, R2, and R3 during the first storm of the rainy season which produces significant flows. Surface water samples shall be analyzed for the following and weekly thereafter during significant (one inch or greater in 24 hours) storm events:

<u>Parameter/ Constituent</u>	<u>Station</u>	<u>Report in Units Of</u>	<u>Reporting Frequency</u>
Total Suspended Solids	R1,R2,R3	mg/l	Weekly
Turbidity	R1,R2,R3	NTU	Weekly
Settleable Solids	R1	ml/l	Weekly

GROUND WATER MONITORING

The following detection monitoring program shall be implemented at the facility to determine compliance with the "water quality protection standards". The monitoring network shall consist of "background" monitoring wells OB-5 and OB-7, and downgradient monitoring wells OB-2, OB-6A, OB-6B, OB-9, and a new well to be installed downgradient of Phase II (OB-16). In addition, the ground water underdrain systems for Phase I and Phase II shall be monitored. Wells OB-2, OB-6A, OB-6B, and OB-16 shall constitute the "points of compliance" with respect to ground water. Samples from all monitoring wells and ground water underdrain systems shall be analyzed for the parameters and constituents listed below:

MONITORING AND REPORTING PROGRAM
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-4-

<u>Parameter/ Constituent</u>	<u>Report in Units of</u>	<u>Sampling & Reporting Frequency</u>
Specific Conductance (field)	umhos/cm	Monthly
pH (field)	pH units	Monthly
Turbidity	NTU	Monthly
Total Dissolved Solids	mg/l	Monthly
Chloride	mg/l	Monthly
Sulfate	mg/l	Quarterly
Nitrate	mg/l	Quarterly
Hardness	mg/l	Quarterly
Sulfides (including H ₂ S)	presence or absence	Quarterly
Carbonate Alkalinity	mg/l	Quarterly
Bicarbonate Alkalinity	mg/l	Quarterly
Total Alkalinity	mg/l	Quarterly
Dissolved Iron ¹	mg/l	Quarterly
Sodium	mg/l	Quarterly
Magnesium	mg/l	Quarterly
Calcium	mg/l	Quarterly
Potassium	mg/l	Quarterly
Dissolved Organic Carbon	mg/l	Semiannually ³
Volatile Organics ²	ug/l	Semiannually ³
Aluminum ¹	mg/l	Semiannually ³
Antimony ¹	mg/l	Semiannually ³
Arsenic	mg/l	Semiannually ³
Cadmium ¹	mg/l	Semiannually ³
Total Chromium (III + VI) ¹	mg/l	Semiannually ³
Chromium (VI)	mg/l	Semiannually ³
Copper ¹	mg/l	Semiannually ³
Lead ¹	mg/l	Semiannually ³
Manganese ¹	mg/l	Semiannually ³
Mercury	mg/l	Semiannually ³
Nickel ¹	mg/l	Semiannually ³
Selenium	mg/l	Semiannually ³
Silver ¹	mg/l	Semiannually ³
Thallium ¹	mg/l	Semiannually ³
Zinc ¹	mg/l	Semiannually ³

¹ Inductively Coupled Argon Plasma Atomic Emission Spectroscopy (ICAP) may be used for analysis of these constituents only.

² EPA Methods 601 and 602, or EPA Method 624 shall be used. All peaks shall be reported.

³ Semiannual samples shall be taken in February and August.

MONITORING AND REPORTING PROGRAM
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-5-

The Discharger shall determine at each sampling whether there is a statistically significant increase over water quality protection standards for each parameter and constituent analyzed.

The ground water surface elevation (in feet and hundredths, MSL) in all wells shall be measured monthly and used to determine the velocity and direction of ground water flow. This information shall be displayed on a water table contour map and/or ground water flow net for the site.

VADOSE ZONE MONITORING

A single suction lysimeter shall be installed under the Class II surface impoundment. If sufficient sample is obtained from the compliance lysimeter to perform any of the required analyses, another lysimeter shall be installed in an area capable of obtaining samples indicative of background soil-pore liquid which would not be affected by the landfill operations.

Samples from the lysimeters shall be analyzed for the constituents and at the frequencies listed under **GROUND WATER MONITORING** above. If insufficient sample is obtained from the lysimeters to analyze for all the constituents listed under **GROUND WATER MONITORING**, the sample shall be analyzed for the constituents listed below in the order in which they are listed until all the sample is used. If any sample remains, it shall be analyzed for the remaining constituents listed under **GROUND WATER MONITORING**.

<u>Parameter/ Constituent</u>	<u>Report in Units of</u>	<u>Sampling & Reporting Frequency</u>
Specific Conductance (field)	umhos/cm	Quarterly
pH (field)	pH Units	Quarterly
Total Dissolved Solids	mg/l	Quarterly
Chloride	mg/l	Quarterly
Sulfate	mg/l	Quarterly
Nitrate	mg/l	Quarterly
Sodium	mg/l	Quarterly
Magnesium	mg/l	Quarterly
Calcium	mg/l	Quarterly
Potassium	mg/l	Quarterly
Hardness	mg/l	Quarterly
Total Alkalinity	mg/l	Quarterly
Carbonate Alkalinity	mg/l	Quarterly
Bicarbonate Alkalinity	mg/l	Quarterly
Iron	mg/l	Quarterly

WATER QUALITY PROTECTION STANDARDS

Standards for Surface Waters

Quarterly surface water samples shall be taken from Dry Creek at Station R2 for one year and analyzed for each of the parameters and constituents listed under "SURFACE WATER MONITORING" above. Analyses shall account for measurement errors in sampling and analysis. Data from these analyses shall be reported to the Board by 1 June 1991 for use by the Board in determining water quality protection standards for surface waters at the site.

If subsequent upstream surface water sampling indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of these water quality protection standards.

Standards for Ground Waters

Attachment "E" contains data from background wells OB-5 and OB-7. These data constitute the water quality protection standards for the listed constituents for ground water beneath the site.

Any organic constituents detected in the downgradient wells using EPA Methods 601, 602, and 624 shall constitute a violation of the water quality protection standards unless the Discharger can provide evidence the constituent is present upgradient of the site or is due to field or laboratory contamination.

Water quality protection standards for other parameters shall be compiled by the Regional Board and shall become a part of this Order.

If subsequent sampling of "background" monitoring wells indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of these water quality protection standards.

Statistical Procedures for Determining Significant Increases

The significance of increases in indicator parameters and waste constituents over water quality protection standards shall be established through the use of appropriate statistical tests and procedures described in the EPA document entitled *Statistical Analysis of Ground-Water Monitoring Data At RCRA Facilities* published in April 1989. Where the data allow, the one-way parametric Analysis of Variance (ANOVA) test is preferred. Other suitable statistical tests may be used with the approval of the Executive Officer.

MONITORING AND REPORTING PROGRAM
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-7-

REPORTING

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or lack thereof.

Monthly monitoring reports shall be submitted to the Board by the 15th day of the month following the month in which the samples were taken. Quarterly, semiannual, and annual monitoring reports shall be submitted to the Board by the 15th day of the month following the calendar quarter in which the samples were taken or observations made.

The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board.

A report shall be submitted to the Board by 30 January of each year containing both tabular and graphical summaries of the monitoring data obtained during the previous year. The report shall include a discussion of compliance with the waste discharge requirements.

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by



WILLIAM H. CROOKS, Executive Officer

22 June 1990

(Date)

PVW:glN 5/29/90

INFORMATION SHEET

SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

The Shasta County West Central Landfill is approximately 12 miles southwest of Redding. Beginning in January 1990, the City of Redding has taken over operation of the landfill.

The landfill has accepted waste since 1981. The facility will be developed in five phases with a total volume of 17,000,000 cubic yards. Phase I is full and will be closed. Phase II-A is currently under construction and will accept waste beginning in the summer of 1990. Phase II will have a capacity of approximately 7,000,000 cubic yards and an estimated life of 20 years. Phase II will be constructed in stages. Phase II-A is approximately seven acres in size and will reach its capacity of 225,000 cubic yards in one year. Construction of the remainder of Phase II will progress as needed.

The design plans for Phase II include the construction of a landfill with a one-foot compacted clay liner. The lower six inches of the liner will be compacted to achieve a maximum permeability of 1×10^{-8} cm/sec. The upper six inches will have bentonite added to the native material to achieve a maximum permeability of 5×10^{-7} . A blanket LCRS will cover all new landfill areas.

Leachate will be discharged to a new Class II leachate pond. The leachate pond will consist of a two-foot clay liner overlain by an 80-mil-thick synthetic liner. A synthetic geonet drainage layer for leachate collection and removal will be placed between the synthetic liners.

Four unclassified surface impoundments, one at the base of the landfill and three on the ridge, will be used for the containment of contact water which may contain minor amounts of waste constituents. Water from these ponds will either be evaporated in the summer months or sprinkled on the hillside.

Tires which are classified as an inert waste under Subchapter 15 shall be disposed in a separate unlined portion of the facility. Wastes will be accepted from the unincorporated areas of Shasta County and the Cities of Redding and Anderson. The current average daily load is estimated at 325 tons or 812 cubic yards (based upon 800 lbs/yard of compacted waste).

The disposal method is a canyon fill operation. The surrounding area consists of shallow canyons vegetated with oak trees, manzanita brush, and grass. Land within 1,000 feet of the facility is used for grazing and open space. Surface water drainage is to Dry Creek, a tributary of Cottonwood Creek, which flows into the Sacramento River.

INFORMATION SHEET
SHASTA COUNTY
WEST CENTRAL CLASS III LANDFILL
AND CLASS II SURFACE IMPOUNDMENT
SHASTA COUNTY

-2-

The facility is not within the 100-year floodplain; however, the proposed expansion will cover an ephemeral drainage course. To prevent inundation of the facility, the watercourse upstream of the facility has been diverted into the adjacent drainage.

The beneficial uses of these surface waters are domestic, municipal, agricultural, and industrial supply; ground water recharge; power generation; recreation; esthetic enjoyment; navigation; freshwater replenishment; and preservation and enhancement of fish, wildlife, and other aquatic resources.

The site is near the western edge of the Redding ground water basin. The geologic units exposed at the site consist of the Red Bluff Formation on the ridge tops underlain by the Tehama Formation. The Chico Formation is present at depths below the site but does not outcrop in the area. Recent alluvium and dredge tailings are found in the canyon bottom. The Red Bluff and Tehama Formations are fluvial deposits of clayey and silty sandstone with lenses of pebble and cobble conglomerates. Permeabilities range between 1×10^{-5} and 1×10^{-6} cm/sec.

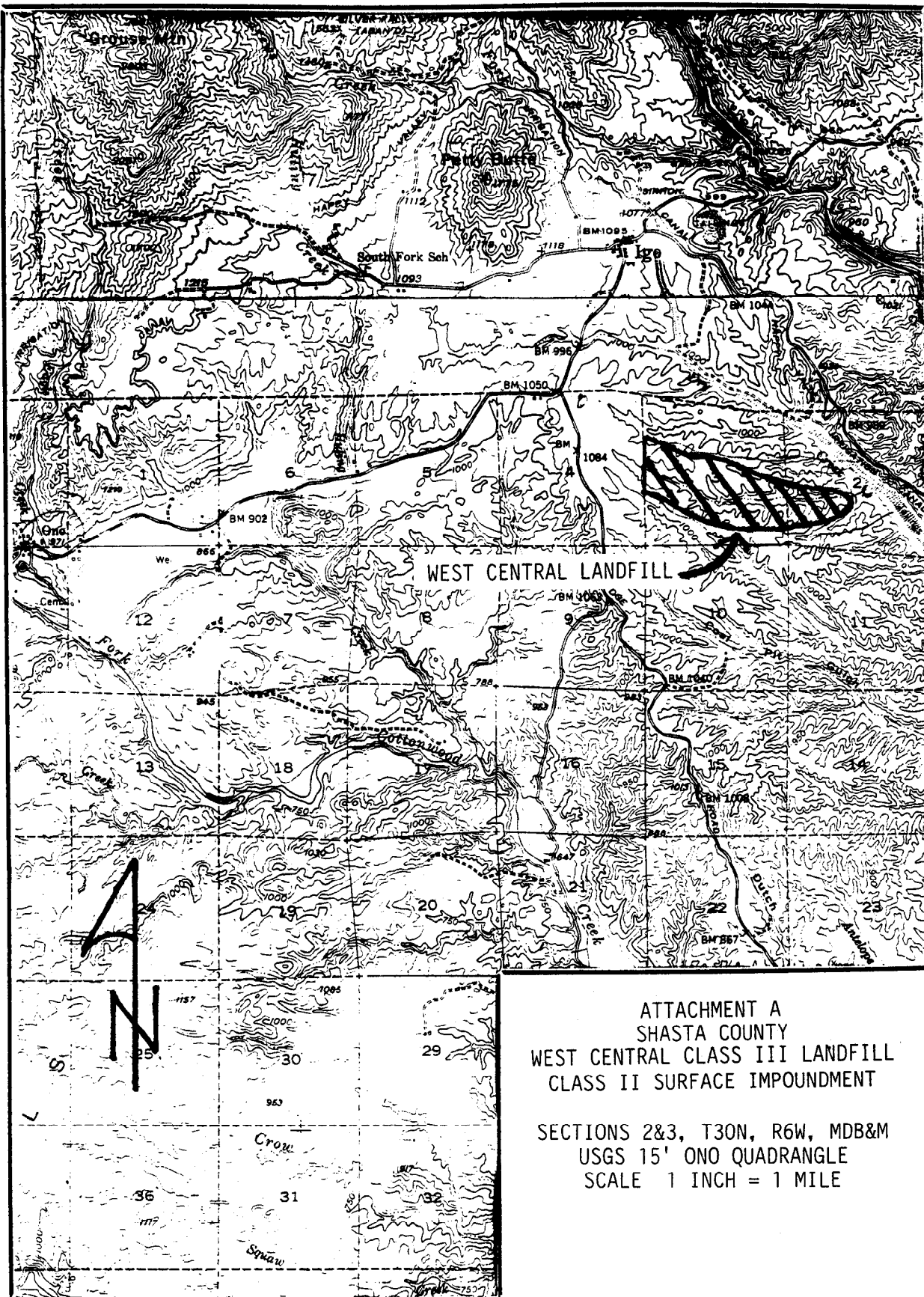
First-encountered ground water is in the Tehama Formation. Flow generally follows the topography, flowing from the ridges into the canyon. Monitoring of the ground water indicates the water table is approximately 80 feet below the ridge tops. Wells in the bottom of the canyon are artesian in the winter and spring, indicating a ground water discharge area.

The Discharger has constructed ground water underdrain systems in the canyon bottoms beneath the landfill units to prevent ground water from building up under the liners. The underdrains maintain the minimum five feet of separation between wastes and ground water. Water collected in the underdrain systems can be collected and tested for waste constituents.

The beneficial uses of ground water are domestic, municipal, agricultural, and industrial supply.

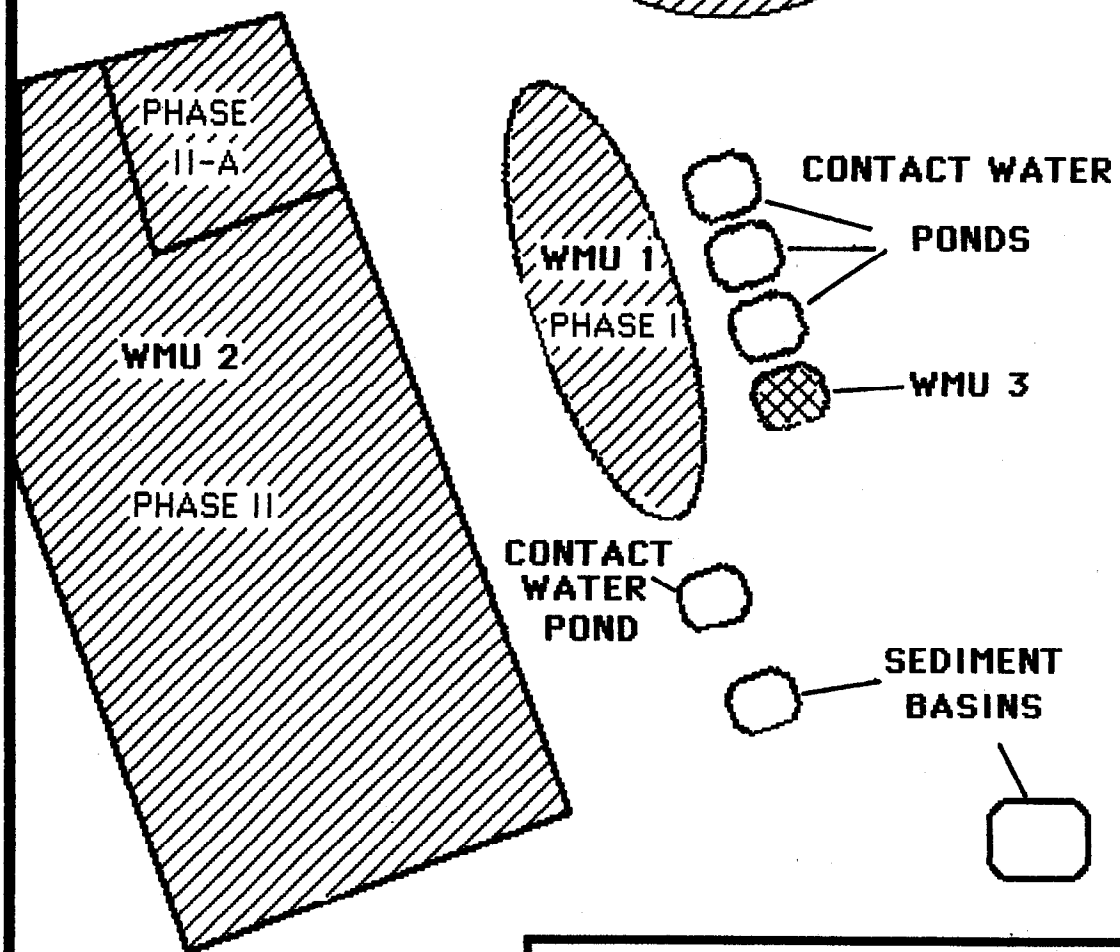
Average annual precipitation is equal to 35 inches and with the average annual evaporation is approximately 60 inches. Based upon these data, the facility has an average annual net evaporation of 25 inches.

PVW:glN 5/29/90



CLEAR CREEK ROAD

TIRE DISPOSAL AREA



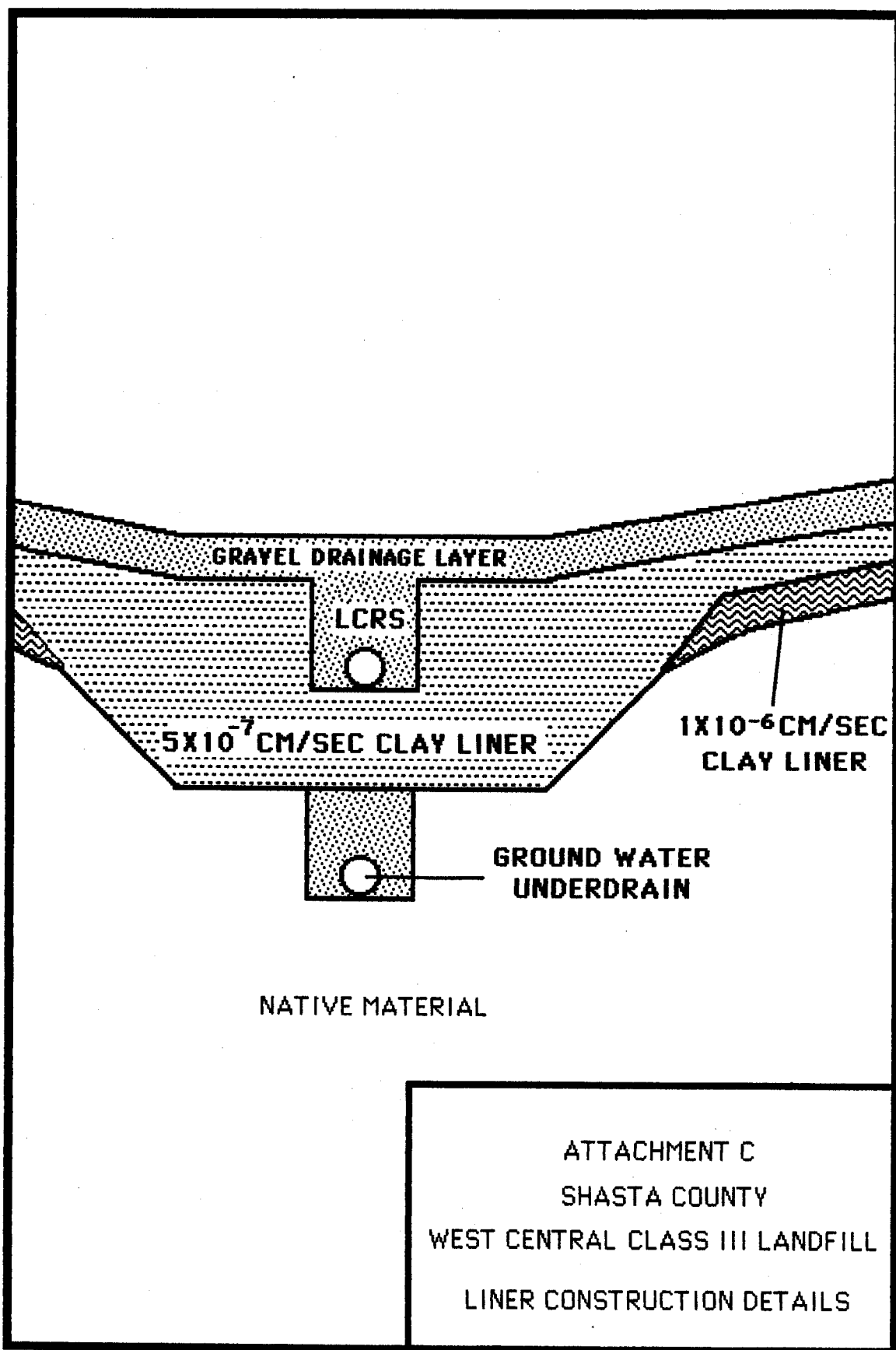
ATTACHMENT B

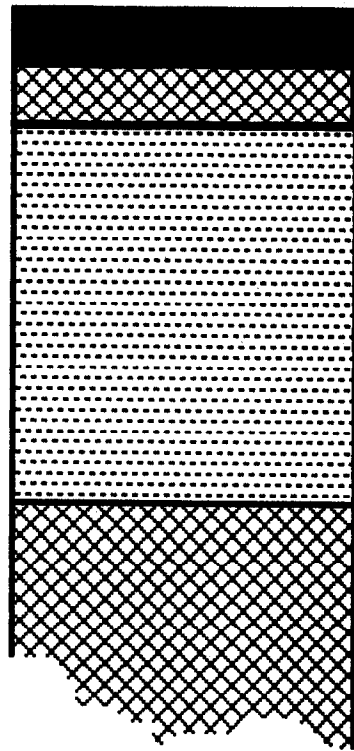
SHASTA COUNTY

WEST CENTRAL CLASS III LANDFILL

CLASS II SURFACE IMPOUNDMENT

NO SCALE





**80 MIL SYNTHETIC LINER
GEONET DRAINAGE LAYER**

**24 INCHES, 1×10^{-6} CM/SEC
CLAY LINER**

NATURAL SOIL

**ATTACHMENT D
SHASTA COUNTY WEST CENTRAL
CLASS II SURFACE IMPOUNDMENT
LINER CONSTRUCTION DETAILS**

ATTACHMENT E

WATER QUALITY PROTECTION STANDARDS
SHASTA COUNTY WEST CENTRAL CLASS III LANDFILL

Date	Well:	ELECTRICAL CONDUCTIVITY umhos/cm		CHLORIDES mg/l		HARDNESS (CaCO ₃) mg/l		ALKALINITY (CaCO ₃) mg/l	
		OB-5	OB-7	OB-5	OB-7	OB-5	OB-7	OB-5	OB-7
Sep 82		320	170						
Oct 82		310	157						
Nov 82		280	151						
Jan 83		284	159						
Feb 83		269	151						
Mar 83		288	162						
Apr 83		302	198						
May 83		329	192						
Jun 83		302	181						
Aug 83		311	182						
Sep 83		321	188						
Oct 83		399	305	7.1	5.3	137	89		
Nov 83		309	194						
Dec 83		262	175						
Jan 84		275	199						
Mar 84		265	184						
May 84		302	229						
Jun 84		346	244						
Sep 84		315	232						
Dec 84		250	187						
Jan 85		346	253	1.8	2.9	138	104		
Feb 85		302	202						
Mar 84		284	209						
Apr 85		326	236	4.8	6.5	137	92		
May 85		327	232						
Jun 85		306	224						
Jul 85		310	297	2.2	3.6	138	98		
Aug 85		308	222						
Oct 85		294	229						
Nov 85		314	262	3.2	5.4	139	151		
Dec 85		243	181						
Jan 86		246	177						
Feb 86		290	230	1.0	3.1	139	122		
Mar 86		349	284						
Apr 85		350	270						
May 86		378	305						
Jun 86		270	321						
Aug 86		290	250	4.0	4.0	140	104		
Sep 86		300	225						
Oct 86		300	242						

ATTACHMENT E
(CONTINUED)

WATER QUALITY PROTECTION STANDARDS
SHASTA COUNTY WEST CENTRAL CLASS III LANDFILL

Date	Well:	ELECTRICAL CONDUCTIVITY umhos/cm		CHLORIDES mg/l		HARDNESS (CaCO ₃) mg/l		ALKALINITY (CaCO ₃) mg/l	
		OB-5	OB-7	OB-5	OB-7	OB-5	OB-7	OB-5	OB-7
Nov 86		300	230						
Dec 86		280	255						
Jan 87			247						
Feb 87		300	250	4.0	4.0	125	100		
Mar 87			247						
Apr 87		300	247	2.1		120			
Aug 87		300	240	7.0	4.0	130	100		
Nov 87		280	230	2.0	2.0	120	98		
Jan 88		272	215	3.0	3.0	120	95		
Apr 88		314	260	1.6	2.6	126	101		
Jul 88		300	250	2.1	3.1	127	102		
Sep 88			246		1.5				
Nov 88		325		1.8		128	105		
Feb 89		248	220	1.8	3.3			160	136
Mar 89		235	200	3.0	3.0			158	133
Mar 89 (2)				2.7	2.9				
Apr 89		260	204	2.8	2.8			158	130
May 89		255	211	2.5	2.3			162	127
Jun 89		281	231	3.6	4.2			161	126
Jul 89		276	230	2.4	3.1			244	124
Aug 89			212	3.2				126	
Sep 89		290		2.4				163	